

naturalists, which have come under my notice have all appeared to me to be referable to *C. fornicata* (L.) Lam., or to the variety of *C. convexa* Say which has grown upon a broad, not very convex, or perhaps a partly concave surface. A fine series of shells from Cape May, submitted to me by Mr. Ford as *C. glauca* come under the latter category. They are distinct from *C. fornicata*, but they do not show the characters called for by Say's description, which in itself presents no features to distinguish the shell he describes from the young and spotted form of *C. fornicata*, to which I have no doubt it belonged. Such shells are in the National Museum labeled *C. glauca* by Stimpson. It may not be known to all our conchologists that the extremely high and usually dark-colored forms of *Crepidula*, such as *C. convexa* (typical) and *C. adunca* of California, derive their peculiar appearance from roosting on some gasteropod, and that wider and less elevated forms of the same species can almost always be found, if not in the same locality, at least in a geographical series of wide range. The difficulties, in the way of a satisfactory determination of such semi-parasitic forms as the *Culyptræidæ* are very great, and increase in my experience with the amount of material subjected to study. That there may be a distinct form entitled to be called *C. glauca* I do not wish positively to deny, but I must confess that I have never seen one and therefore have grave doubts of its existence.

A LIST OF THE MOLLUSCA OF COLORADO.

(Compiled for the Colorado Biological Association.)

BY T. D. A. COCKERELL.

In the "Journal of Conchology," vol. vi, pp. 60-65, I gave some preliminary remarks on the Mollusca of Colorado, stating that from the lack of records and other reasons, a complete list could not then be prepared. Since then a considerable amount of material and information has been gathered, and while much remains unknown, there is sufficient ascertained to seem to warrant the presentation of a faunal list. In this list the localities are not all given in detail, as

it has been deemed unnecessary to repeat details of this kind which have been published elsewhere. Many species are considered by the author to be identical with those of Europe; some of these are considered distinct by good authorities, and pending sufficient anatomical comparisons, are retained as varieties. A distinction is also drawn between "forms" and "varieties."

LIMACIDÆ.

Agriolimax campestris var. *montanus* (Ing.), Grand Co. (Ingersoll), *Agriolimax* Mörch presents differences from *Limax* proper which are probably to be considered generic. *A. montanus* cannot be distinguished from *campestris* by external characters, and I do not think its anatomical ones warrant specific separation.

A. campestris montanus form *castaneus* (Ing.) Blue River Valley (Ingersoll). Probably only a young example of *montanus*, and certainly no better than a variety. Vide J. of Couch. V, 358.

A. campestris montanus form *typicus* Ckll. Custer Co.; Chaffee Co.; Saguache Co.; Fremont Co. (Canon City); Summit Co.; Eagle Co.; Mesa Co.; Gunnison Co.

A. campestris montanus form *intermedius* Ckll. Saguache Co.; Fremont Co. (Canon City); Pueblo Co. (Wales Canon); Custer Co. (Wet Mountain Valley); Summit Co.; Mesa Co.; Delta Co.

A. campestris montanus form *tristis* Ckll. Lake Co.; Summit Co.; Delta Co. A few specimens of *A. agrestis* and *Helix nemoralis*, from Burlington, New Jersey, have been liberated at West Cliff, Custer Co.

Vitrina pellucida var. *limpida* (Gould). White Earth River (Ingersoll); Dillon, Summit Co.; Swift Creek, Custer Co.; Grand Mesa, Mesa Co.; Wales Canon, Pueblo Co.; Cottonwood Gulch, Saguache Co.; near Mam Mts., Mesa Co.; West Fork of Surface Creek, Delta Co.; South Park (Yarrow).

V. Pfeifferi Newc. Head of Gunnison River (Binney); San Juan Co. (Ingersoll); E. Fork Arkansas River, Lake Co.; near Cattle Creek, Garfield Co.; near Mam Mts., Mesa Co.; Breckenridge (Hy. Prime); Rock Creek, Routt Co.; Fort Garland (Yarrow); Twin Lakes (Yarrow).

Hyalina nitida (Müll.) High alpine (Carpenter), needs confirmation.

Hyalina arborea (Say). San Juan Co. (Ingersoll); Williams Canon, Manitou (M. E. Cusack); South Park (Yarrow); Twin

Lakes (Yarrow); near West Cliff, Custer Co.; Micawber Mine, 10,000 feet, Custer County; Wales Canon, Pueblo County; Slate Creek, Summit Co.; Buzzard Creek, Mesa Co.; Black Lake Creek, Summit Co.; Chalk Creek, Chaffee Co.; Divide Creek, Garfield Co.; Plateau Creek, Mesa Co.; Kremmling, Grand Co.; near Egeria, Routt Co.

H. arborea form *viridula* Ckll. (Science Gossip, 1889, 257.) Horseshoe Bend Gulch, 10,000 ft., Custer Co., and other localities in the same district.

H. radiatula (Alder). Saguache Co. (Ingersoll); South Park (Yarrow). This is *electrina* Gld., but it may not be *viridula* Menke.

H. radiatula form *radiatula* (Alder). Pueblo Co.; Smith's Park, Custer Co.; Mesa Co.; near Cattle Creek, Garfield Co.

H. radiatula form *virideseenti-alba* (Jeffreys). Smith's Park, Custer Co.; Mesa Co.

H. minuscula (Binney). Mountains near Ft. Garland (Yarrow).

H. (Conulus) fulva var. *chersina* (Say). White Earth River (Ingersoll); South Park (Yarrow); Twin Lakes (Yarrow); near West Cliff, Custer Co.; Micawber Mine, 10,000 ft., Custer Co.; Pueblo Co.; Kremmling, Grand Co.; near Egeria, Routt Co.; Buzzard Creek, Mesa Co.; Surface Creek, Delta Co.; Divide Creek, Garfield Co.; Black Lake Creek, Summit Co. *H. chersina* seems to me a pure synonym of *fulva*, but Mr. Ancy regards it as probably distinct.

HELICIDÆ.

Patula strigosa (Gould). Grand R. (Binney); Gilpin Gulch (H. Prime); Blue River (Yarrow); Saguache (Yarrow).

Patula strigosa form *globosula* nov. Small, globose, dark above periphery with two bands, transverse grooved striae rather well marked. Diam. $11\frac{1}{2}$, alt. $8\frac{1}{2}$ mill. Black Lake Creek, Summit Co. The specimen seems immature, but is remarkable as being the only form I have seen in Colorado that is nearer to *strigosa* than *Cooperi*. Is doubtless allied to var. *Gouldi* Hemphill.

P. strigosa var. *Cooperi* W. G. Binney. Grand River (Binney); Blue River Valley (Ingersoll); Gilpin Gulch (H. Prime); Williams Canon, Manitou (M. E. Cusack); Morrison, Lyons, and St. Vrain Canon (A. Eastwood); Gunnison (E. W. Roper); Middle Park and North Park (Ingersoll); near Durango (A. Eastwood); Micawber Mine, Custer Co.; Kremmling, Grand Co.; Egeria,

Routt Co.; Pueblo Co. (R. Cusack); Hardscrabble Canon, Custer Co.; Black Lake Creek, Summit Co.; Pottery Pass, about 11,500 feet, Summit Co.; Red Cliff, Eagle Co.; near Glenwood Springs, Garfield Co.; near Buzzard Creek, Mesa Co.; Surface Creek, Delta Co.; near White Earth Creek, Gunnison Co.

P. strigosa cooperi form *typica* Ckll. Canon City (T. Morgan); Cave of the Winds, Manitou (E. W. Roper), and many other localities.

P. strigosa cooperi form *trifasciata* Ckll. Mesa Co.

P. strigosa cooperi form *confluens* Ckll. West Mountain Valley, Custer Co.; Garfield Co.; Mesa Co.

P. strigosa cooperi form *elevata* Ckll. Delta Co.

P. strigosa cooperi var. *depressa* nov. Shell flattish, max. diam. $21\frac{1}{2}$, alt. $12\frac{1}{2}$ mill. Specimens of this variety were sent to me by Miss A. Eastwood, who found them in a canon near Durango. The same variety is figured by Binney, Man. Amer. Land Shells (1885), p. 166, fig. 153.

P. strigosa cooperi form *major* nov. Shell with diam. 25 mill. Near head of North Mam Creek, Mesa Co., Sept. 14, 1887.

P. strigosa cooperi var. *minor* Ckll. Near Egeria, Routt Co., abundant. It is quite a distinct local race.

P. strigosa var. *hemphilli* (Newc.) Williams Canon, Manitou (Binney). This perhaps requires confirmation. The examples of *strigosa* I have seen from Williams Canon are ordinary *cooperi*. The young of *cooperi* is keeled.

P. striatella (Anth.) Twin Lakes and South Park (Yarrow); Este's Park (Binney); Grand Co. (Ingersoll); Gilpin Gulch (H. Prime); Williams Canon, Manitou (M. E. Cusack); Swift Creek, Custer Co.; Kremmling, Grand Co.; Rock Creek, Routt Co.; Powderhorn, Gunnison Co.; Divide Creek and near Cattle Creek, Garfield Co.; Buzzard Creek, Mesa Co.; Black Lake Creek, Summit Co.

P. striatella form *albina* (Morse). Near Mam Mts., Mesa Co. Differs from the type in having a white shell.

P. ruderata var. *cronkhitei* (Newc.) Blue River Valley (Ingersoll); Cottonwood Gulch, Saguache Co.; Micawber Mine, Chester Co.

P. ruderata cronkhitei form *viridula* nov. Shell greenish-white. Micawber Mine, Custer Co.

P. ruderata var. *gorktschana* Mouss. Ouray Co. (Binney).

P. (Punctum) pygmaea var. *minutissima* (Lea). Willow Creek,

Custer Co. I doubt whether *minutissima* is separable even as a variety from *pygmaea*.

P. (Punctum) conspecta (Bland.) San Juan Co. (Ingersoll).

P. (Thysanophora) ingersolli (Bland). San Juan Co. (Ingersoll); near Brush Creek, 10,000 ft., Custer Co.; Clearwater Creek, Grand Mesa, Mesa Co. A species of high altitudes.

P. (Helicodiscus) lineata (Say). Animas Valley (Ingersoll).

Helix (Stenotrema) monodon Rack. Colorado Springs (Yarrow). Beyond this record, nothing is known of any species of the group in Colorado. Probably the Colorado Springs *H. monodon* was introduced by human agency.

H. (Vallonia) pulchella var. *costata* (Müll.) San Juan Co. (Ingersoll); South Park (Yarrow); Micawber Mine, Custer Co.; Rock Creek, Routt Co.; Kremmling, Grand Co.; Pueblo Co.; near Salida, Chaffee Co.; Black Lake Creek, Summit Co.; Buzzard Creek, Mesa Co.; near Cattle Creek, Garfield Co. Perhaps *costata* deserves to rank as a species distinct from *pulchella*.

H. pulchella costata form *cyclophorella* (Ancey). The ribs in this form are close and delicate, but it seems to me referable to *costata*. Mr. Ancey has identified a specimen from West Mountain Valley as *cyclophorella*, and indeed, if the name is to be adopted, it will probably include at least a majority if not all of the Colorado specimens of *Vallonia*. Vide 11th Rept. Colo. Biol. Assn. (1889).

H. pulchella pulchella Müll. Binney records *pulchella* from Este's Park, but it is probable that the form was *costata*.

West Cliff, Custer Co., Colorado, Dec. 10, 1889.

AN ANNOTATED LIST OF THE SHELLS OF ST. AUGUSTINE, FLA.

BY C. W. JOHNSON.

The following is a list of the shells which came under my observation while living at St. Augustine from 1881-88.

As very little dredging was done it is probably far from complete, but as some of the notes may be of interest to the Conchologist, I herewith submit it to the readers of the Nautilus.